TOURING

Electronics and wiring manual

TS 45

9020-230Y

EJXU8L1

12 May 2014

TEMSA

Valio in motion

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The Aim of this User's Manual

The Electrical Wiring Manual is prepared to explain how to service your vehicle in the safest and most efficient way.

Safety instructions given in this manual are intended to protect persons and properties.

Therefore, before operating the vehicle or before carrying out any maintenance work, read this manual completely and carefully.

Any injury or damage arisen from noncompliance with the safety instructions given in this manual is the responsibility of thet vehicle's owner.

This manual is intended to be used commonly for all variants of TS 45 Cummins EPA13 (EJXU8L1). Therefore some properties of your vehicle may not comply with those indicated in this manual.

Use of Genuine Parts and Accessories

For a safer and longer service life of the vehicle, use only TEMSA genuine spare parts, accessories or parts which have been approved and tested by TEMSA.

All genuine parts have been approved by TEMSA by means of testing their reliability, endurance and safety factors.

TEMSA does not take any responsibility for any injury or damage due to use of non-approved third party products.

Any alteration of the vehicle may interfere with safety features built into the vehicle and may lead to an accident resulting in serious injury or death.

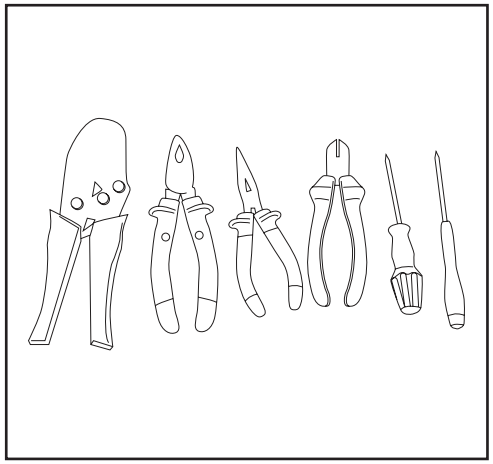
Service and Maintenance

The service and maintenance operations should be carried out by authorized services and be in compliance with TEMSA directives.

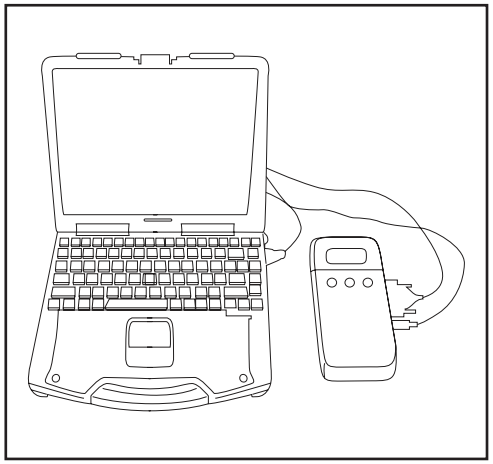
WARNING

Technical information and properties of the vehicles stated within this Electrical Wiring Manual are valid on the date of issue. TEMSA reserves the right to make any necessary changes to the features of its products without giving any advance notice.

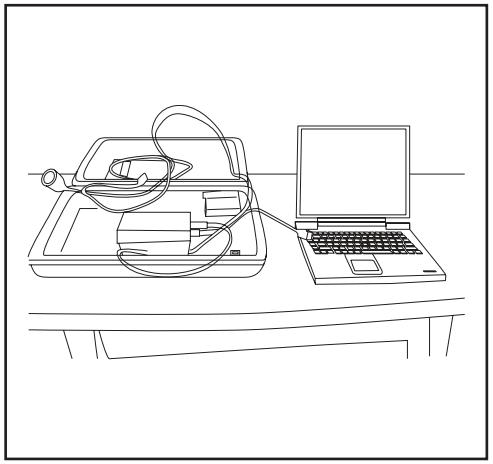
00.1.2 Tools



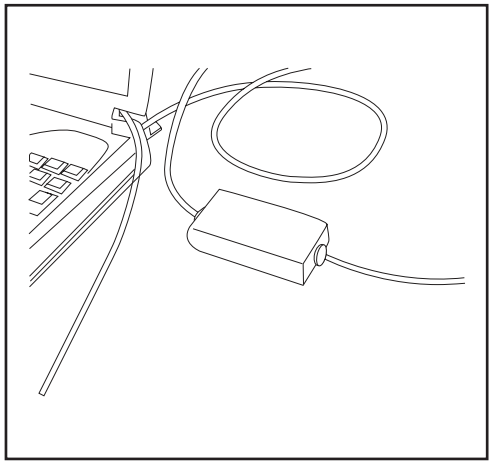
General Tools



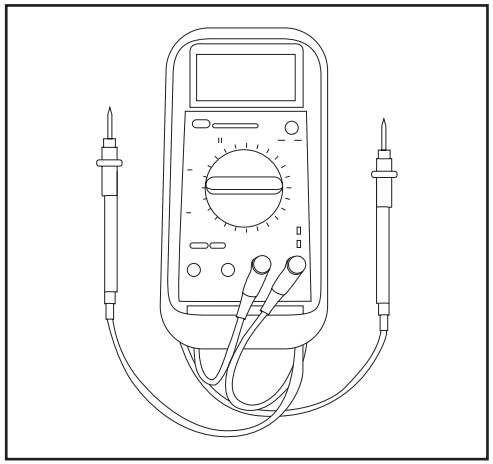
Mitsubishi Diagnostic Tool (MUT III)



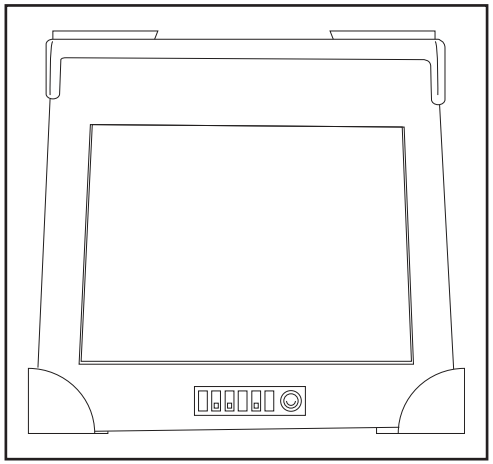
MAN Engine Diagnostic Tool (MANCAT)



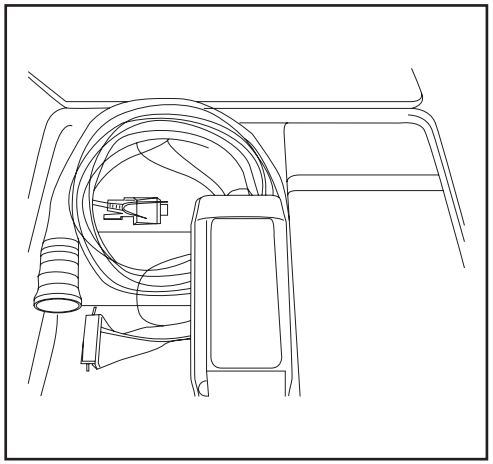
KIBES K-Line Interface Cable



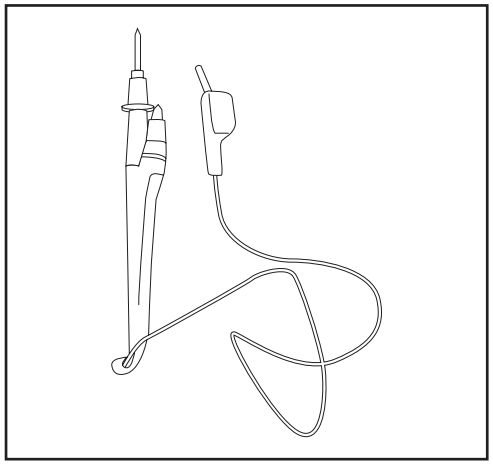
Multimeter



DAF Engine Diagnostic Tool (DAVIE)



CUMMINS Engine Diagnostic Tool (INSIDE)



Connection Wire

00.1.3 Warnings

Symbol List
Operating Instructions in this manual includes the folowing symbols, warning words and signs:

CAUTION
This symbol is used in conditions which may cause damage or injury if necessary measures are not taken.

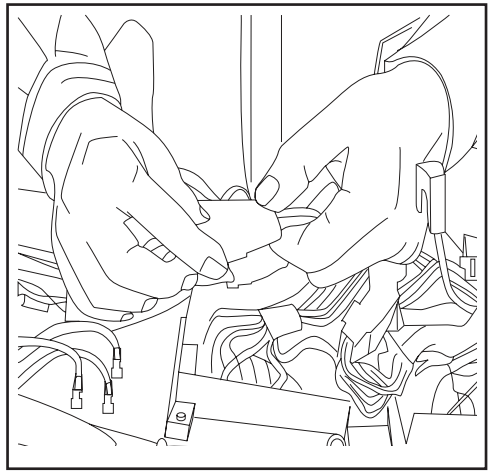
VISUAL INSPECTION
This symbol is used to inform the user that a visual inspection is necessary.

WARNING
This symbol is used in conditions which may cause severe damage or fatal injury if necessary measures are not taken.

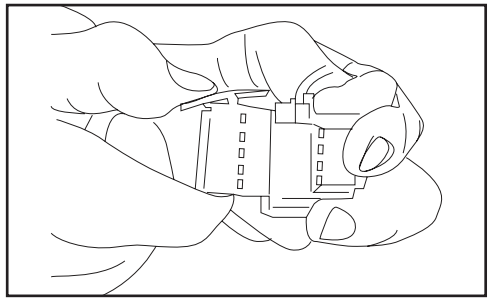
DANGER
This symbol is used to indicate danger.

Safety Precautions
The following safety instructions must be strictly observed.

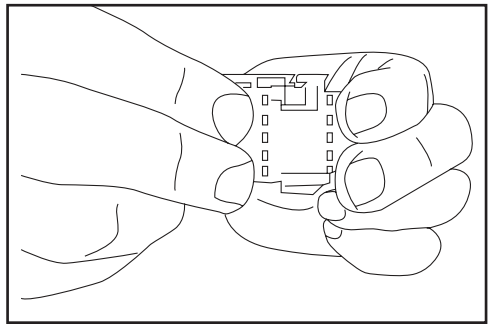
WARNING
To disconnect a connector never pull the harness.



1. Hold the connector.



2. To disconnect locking type connectors push it in the direction indicated by an arrow.



3. To connect a lock type connector, plug it until a click is heard.

00.1.4 Control Units Handling & Repair Precautions

CAUTION

Observe the following precautions when handling or servicing the control units (Engine EDC, Retarder ECU, etc.).

a) Make sure that the control units does not contact directly with rain-water, car-washing water etc. If the control units soaks, wipe it immediately.
b) Avoid unnecessary removal or painting of the cover.
c) To remove the control unit from the vehicle, follow steps mentioned in the 0-08.
d) Apply arc welding for the repair of the vehicle parts steps mentioned in the 0-09.

CAUTION

Cautions during washing the vehicle:

a) Before washing the vehicle, make every electrical equipment waterproof (by covering it with vinyl sheet etc.)
b) Do not wash the electrical harness and waterproof connectors.

CAUTION

During washing the vehicle do not splash pressured water in Fuse Room and to the battery.

00.1.5 Cautions Before Service Work

CAUTIONS

Be sure to use correct tools in the correct place for servicing as mentioned below:

a) Use Fuse Holder for removing of fuses.
b) Use Multimeter or a 24V Controllamp to search for short-circuits if vehicle has not multiplex system.
c) If there is a multiplex system, remember that there is always 12V check voltage in Diagnostic System. Therefore use only Multimeter to check whether the circuit of the system is short or open. Do not use Control lamp or others. Otherwise you could make a mistake to understand the short or open circuit.
d) Use diagnostic tool to check Engine EDC or UPEC. (Note: A diagnostic tool for Cummins Engine is not existing).
e) Use Kibes Runtime Software and K-Line interface cable to check Multiplex system control.

CAUTION

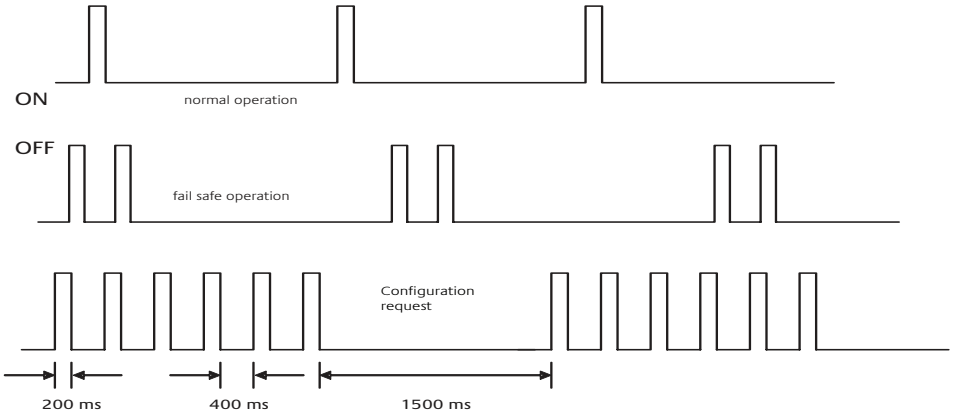
Precautions for multiplex System program installation

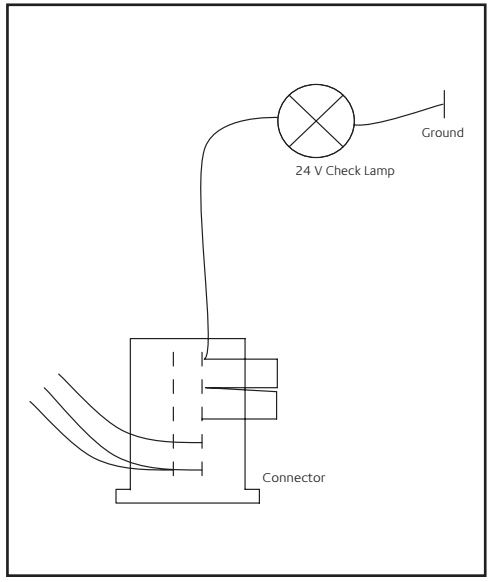
Following instructions must be strictly observed during installation of program to the system.

- Do not install program to the system if there is a person under the vehicle.
- If the program installed to the system while the vehicle is in lifting position, lifting valves can release air and vehicle can go down.
- Power supply should not be closed while installing program to the system. Wait until the installation is completed.
- Program should not be installed while engine is in operating conditions. Otherwise engine stops unsuitable conditions.

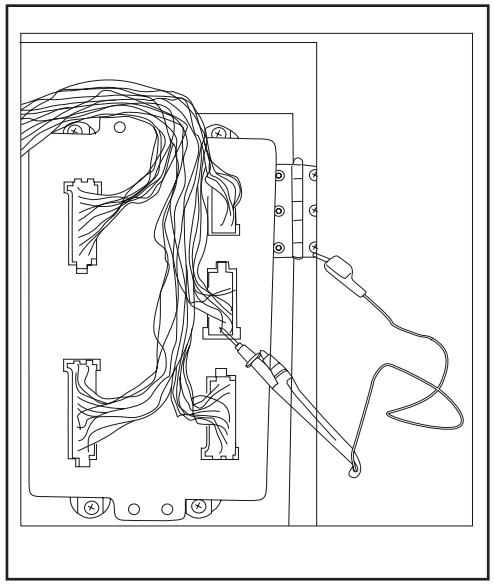
Multiplex System Functional Checks

CAUTION
External node diagnosis:
To AUS_ID_PLUS, a 2 W bulb in connection with a 24 V power supply can be connected for functional checks.

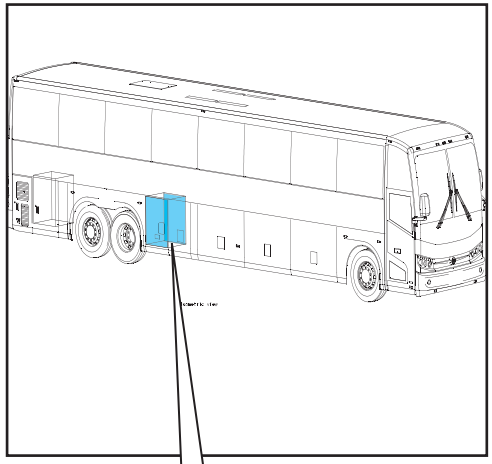




Error Conditions	Cause of Failure
"FAIL SAFE" Operation	CAN-connection failed during operation
Configuration request	Incorrct node ID, incorrect node type or new node (node yet programmed)
OFF	Voltage Supply or CAN already defective or not present when turning on or node defective.
ON	Node defective, Voltage supply OK.



00.1.5 Cautions Before Service Work

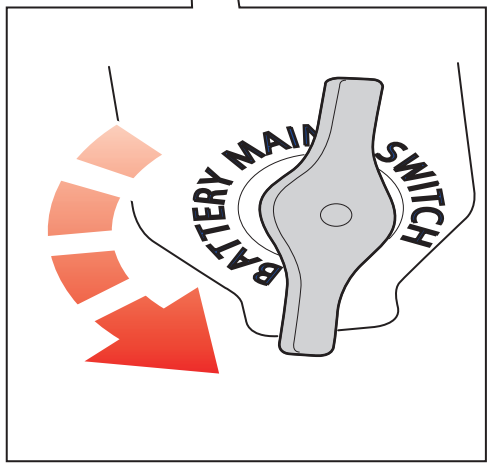


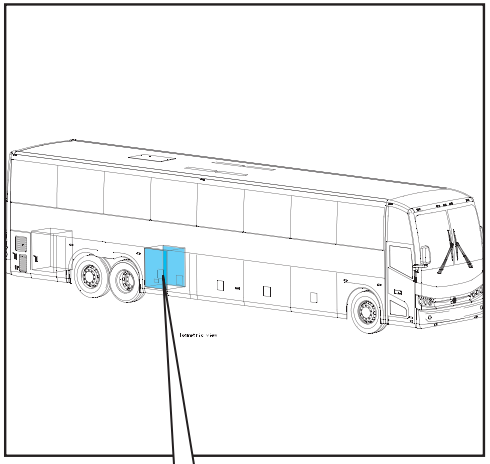
CAUTIONS

Before servicing of electrical systems follow the below mentioned steps:

- Turn the Ignition key to OFF position.
- Turn the Battery Cut Off switch to ON position.
- Check the system failure.

Note: Remember that Battery Cut Off Switch is an OPTION.



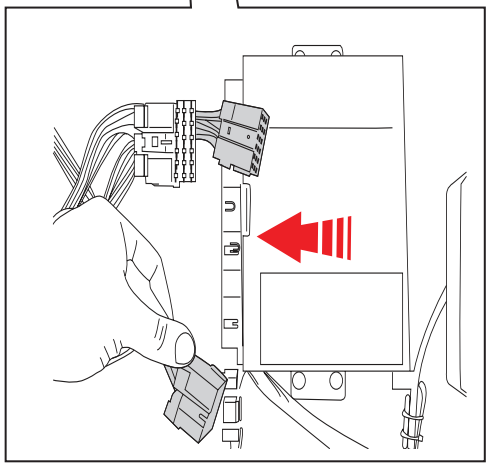


CAUTIONS

Before servicing of Electronic Control Units(ECU) follow the below mentioned steps:

- Turn the Ignition key to OFF position.
- Turn the Battery Cut Off switch to ON position.
- Disconnet all connectors of Electronic Control Unit
- Check the system failure.

Note: Remember that Battery Cut Off Switch is an OPTION.

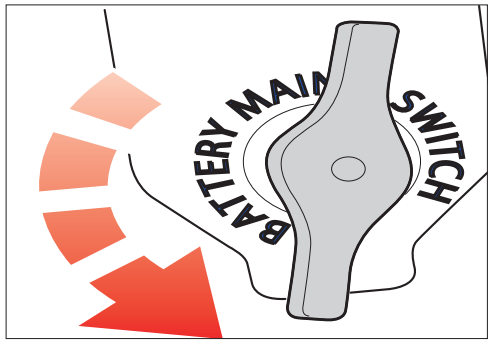


00.1.6 Procedures for Electrical Welding Application

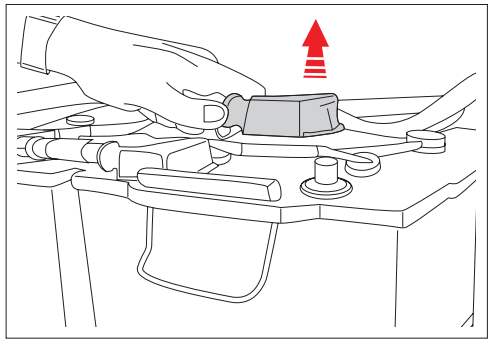
CAUTIONS

Before electrical welding of the vehicle, follow the below mentioned steps

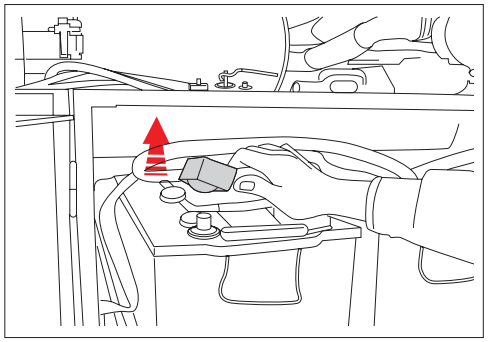
1. Turn the ignition switch to OFF position.



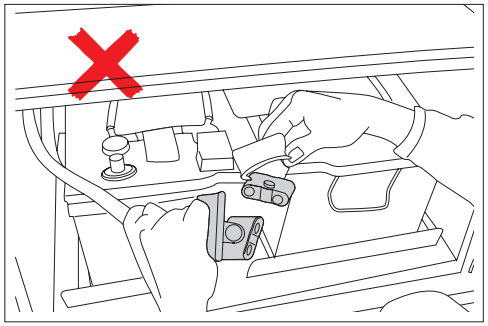
2. Turn the battery cut off switch to ON position.



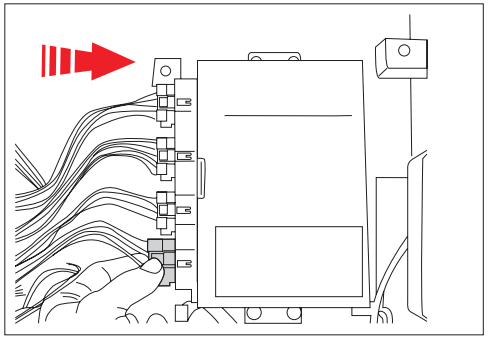
3. Disconnect Battery negative (-) terminal.



4. Disconnect Battery positive (+) terminal.



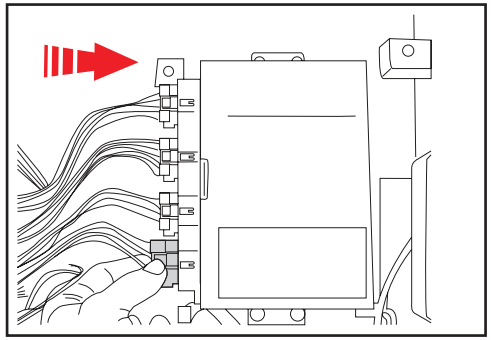
5. Touch and joint negative and positive cables of vehicle to discharge static electric in the harnesses.



6. Disconnect connectors of all Electronic Control Units.

7. After the above mentioned steps are finished welding prosses can be applied safely.

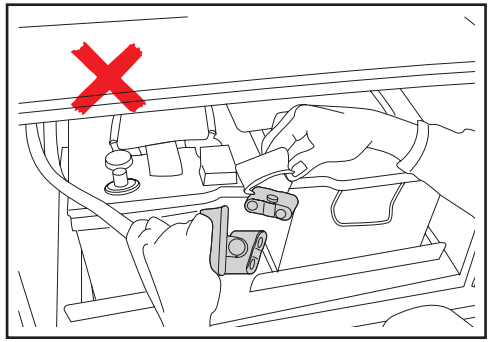
00.1.7 Procedures After Electrical Welding Application



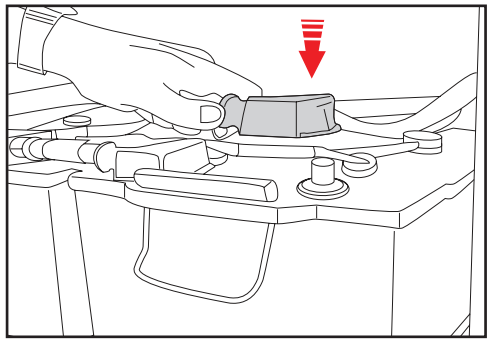
CAUTIONS

After electrical welding of the vehicle, follow the below mentioned steps

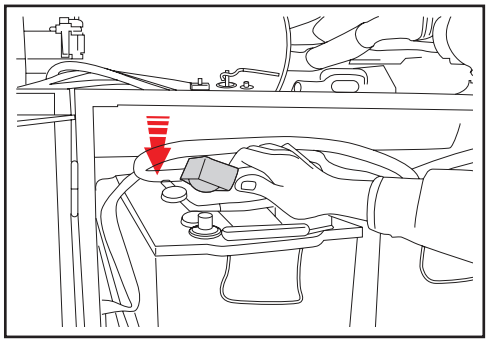
1. Connect all connectors of all Electronic Control Units.



2. Disjoint negative and positive cables of the vehicle.



3. Connect Battery negative (-) terminal.



4. Connect Battery positive (+) terminal

5. Turn the ignition key to ON position.

6. Turn the Battery Cut-Off switch to OFF position.

7. Now vehicle is ready to start.

00.1.8 Possible failure causes for KIBES 32 products

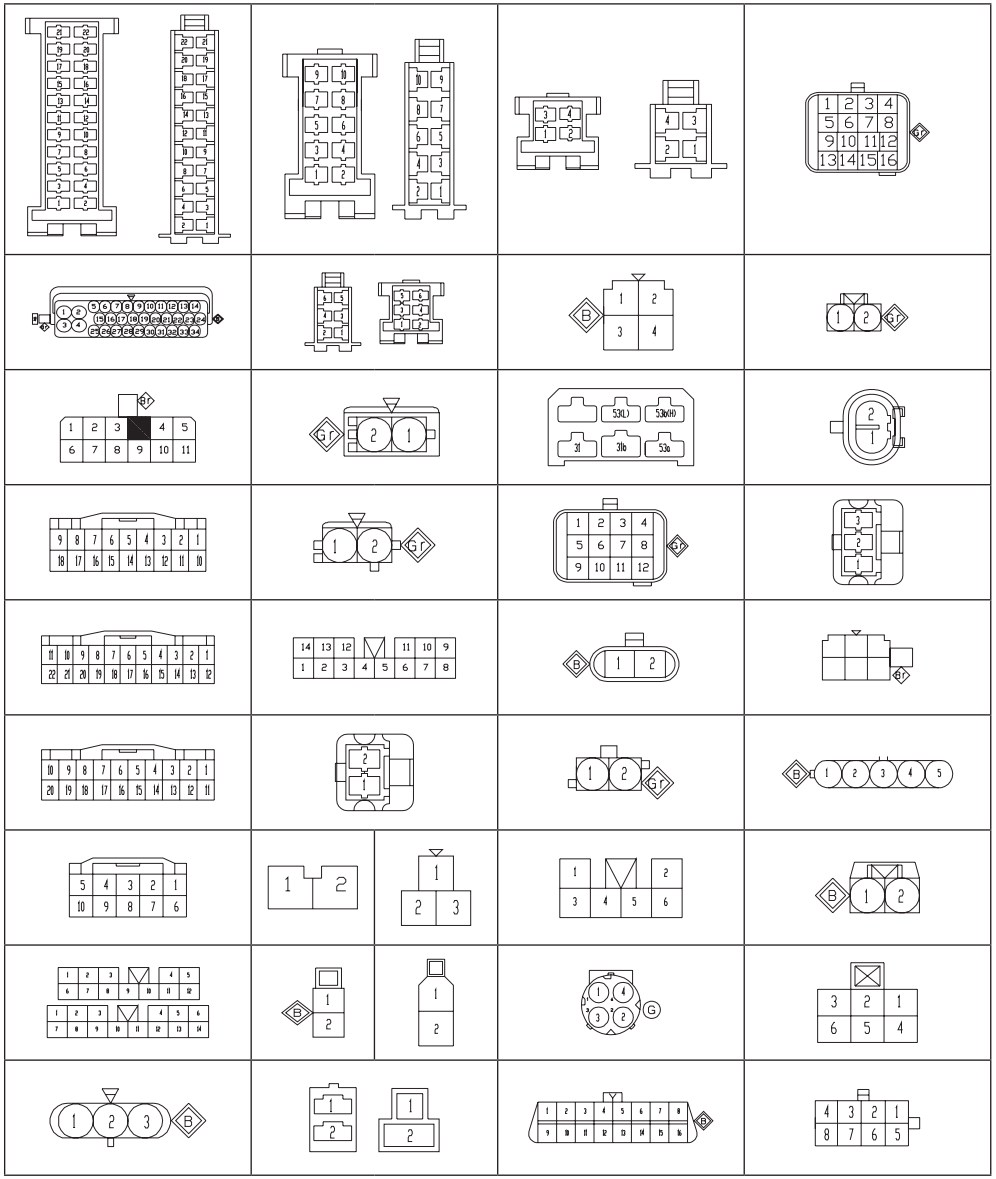
CAUTION

- Welding on the vehicle when KIBES-32 products are connected to the harness of the vehicle
- Vehicle has been struck by lightning
- ESD (electro-static discharge) by touching of connector pins by a person without protection
against ESD (e.g. ESD shoes)
- Exchange of KIBES-32 product during connection to power.
(Before exchange, the KIBES-32 product has to be disconnected from power [e.g. switch off
battery])
- Overstress of outputs of KIBES-32 products.
Some examples on base of the MUX2-B or MUX2-M are described below.

00.1.9 Symbols of Switches Lenses

Glass Heater Switch	Auxiliary Lamp Switch	Roof Heater Fan Motor Switch
Mirror Heater Switch	Room Lamp Switch	Reverse Gear Horn Cancel Switch
Hazard Switch	Reading Lamp Switch	Door Buzzer Cancel Switch
Destination Plate Lamp	Driver Lamp Switch	School Bus Lamp Switch
Lifting Switch	**WC** WC Power Switch	Bus Stop Brake Switch
ASR Switch	Electrical Curtain Switch	Convector Control Switch
Exhaust Brake Switch	**STOP START** Engine Start-Stop Switch	Economy Switch
ABS Switch	**UDS** UDS Switch	Stairs Fan Control Switch
Retarder Switch	Park & Room Lamp Switch	Wiper Water Switch
Auto Lubricate	Front Fog Lamp Switch	Front Door Switch
Horn Signal	Rear Fog Lamp Switch	Rear Door Switch
Central Lock Switch	Motorfan Floor Switch	Driver Glass Switch
Preheater Switch		

00.1.10 Socket Configurations



00.2.1 How to Use This Manual

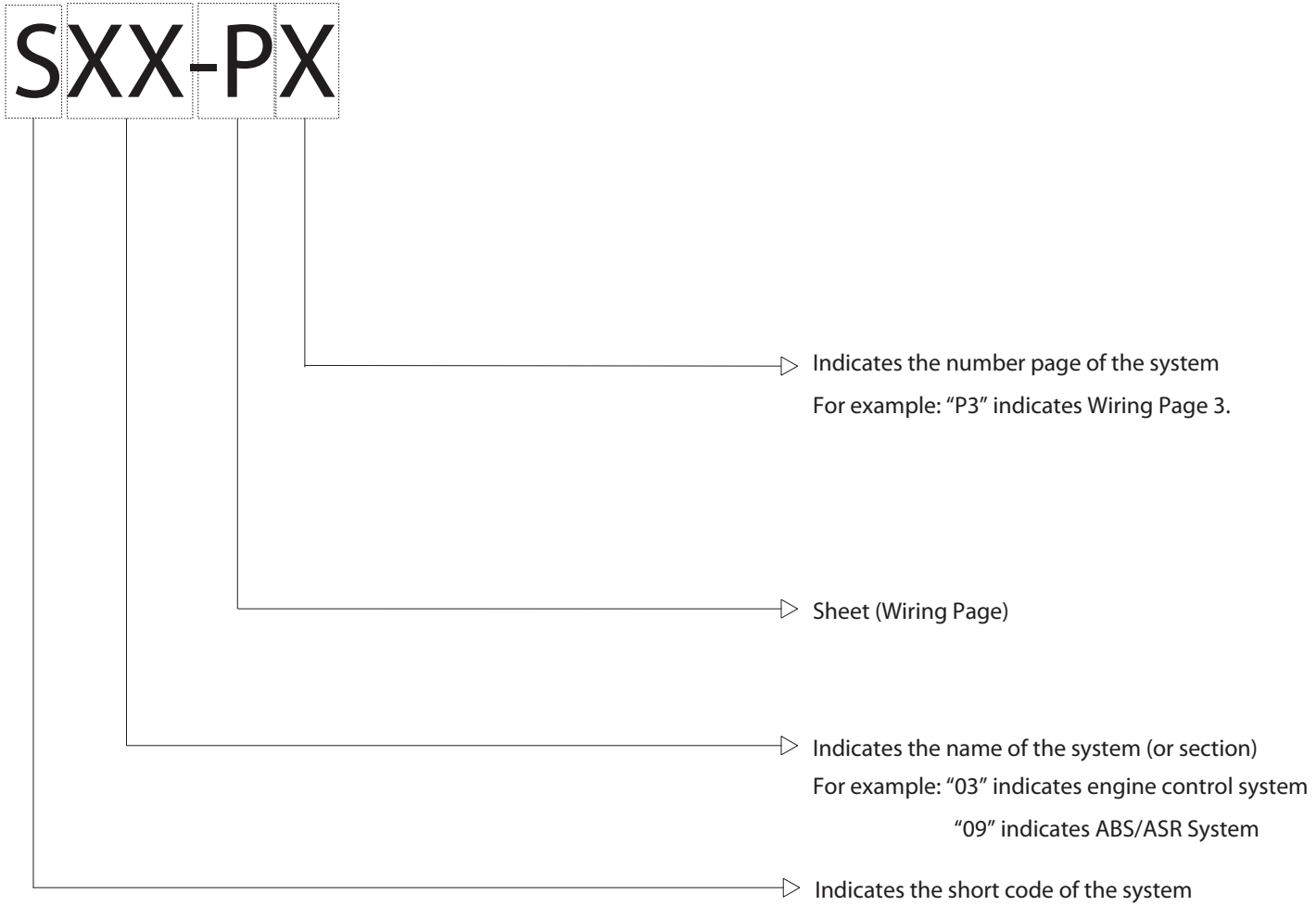
This manual consists of following parts.
1) General Information
2) System Chapters
3) Appendix

On General Information
Cautions before service work, warnings, symbols of switch lens, symbols and definitions, configuration of sockets and wiring harness configurations are shown.

On System Chapters
Wiring diagrams, locations of components, spesifications, troubleshooting and OEM wiring diagrams are shown,

On Appendix
Software Downloading & Online Test, OEM documents are shown.

00.2.2 Coding system of the Wiring Manual


SXX-PX
Indicates the number page of the system
For example: “P3” indicates Wiring Page 3.
Sheet (Wiring Page)
Indicates the name of the system (or section)
For example: “03” indicates engine control system
“09” indicates ABS/ASR System
Indicates the short code of the system

00.2.3 Wiring Diagram Definitions

While looking to the wiring diagram on manual, you will see two s. On the right hand side you will see electrical wiring diagram. Some symbols and codes exsits on the diagram. On the left hand side you will see the explanations of the codes on the table, By looking to the part no, you can easily find the component code and definitions.

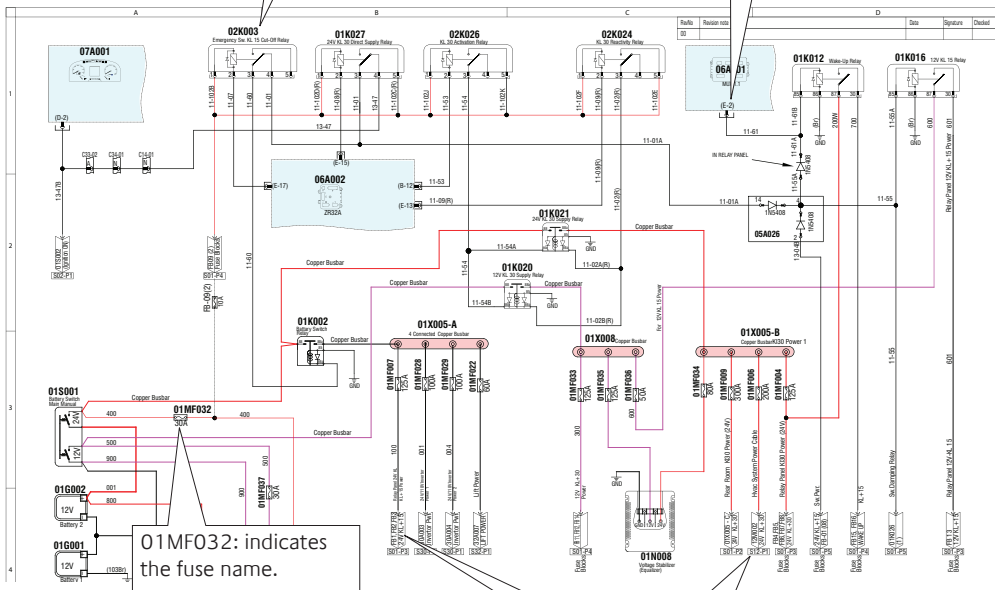
Code	Spanish	Français
01G001	Batería 1	Batterie1
01G002	Batería 2	Batterie1
01K002	Relé del Interruptor del Aislamiento Principal	Relais Contacteur Principal De Sécurité
01K012	Relé del Encendido (Panel de Relés Frontal)	Relais De Reveil (Panneau De Relais Avant)
01K016	Relé KI15 de 12V	Relais 12V KI15
01K020	Relé de alimentación de 12V KI 30	12V KI 30 Relais d'alimentation
01K021	Relé de alimentación de 24V KI 30	24V KI 30 Relais d'alimentation
01K022	relé para permitir que el vehículo se detenga cuando su velocidad sea inferior a 5 km/h	Relais permettant au véhicule de s'arrêter lorsque la vitesse est inférieure à 5 km/h
01K026	Relé de diagnóstico de amortiguación de voltaje	Relé de diagnóstico de amortiguación de voltaje
01MF004	Alimentación del Panel de Relés KI30	Alimentation Du Panneau Des Relais KI30
01MF006	Alimentación del Aire Acondicionado	Alimentation Du Climatiseur
01MF007	Alimentación del Panel de Relés KI15	Alimentation Du Panneau Des Relais KI15
01MF009	[illegible]limentación del KI30 1	Alimentation 1 Du KI30
01MF022	Alim[illegible]ación del Elevador	Puissance Du Mecanisme De Levage
02K026	Relé de a[illegible]ión KL 30	KL 30 Relais d'activation
05A026	Grupo de Diod[illegible]esistencias	Bloc De Diodes Et De Resistances
07A001	Grupo de Instrume[illegible]	Combiné D'Instruments
12M002	Motor d[illegible]dor	Moteur Soufflante Du Condenseur
32A007	Elevado[illegible]ll)	Mecanisme De Levage Des Handicapes (Carroll)

The table shows the definitions of the codes that are on the diagram in many languages.

IMPORTANT : CODE NUMBERS OF COMPONENTS DO NOT REPRESENT PART NUMBERS

01K003 : Indicates the code number for the component.

E 2: indicates the position of the component on diagram. (Exam: A1, B3)



01MF032: indicates the fuse name.

30 A: indicates the amper value of fuse. Fuse definition and location are shown in Power System.

Power Input or Output

KL 31: Ground
KL 58: Park Lamp
KL 30: Battery Power
KL 15: Ignition Power

12M002: Indicates the code of the component.

S12-P1: Indicates the number. (S12-P1= System 12- Wiring Page 1)

00.2.4 Wire Code Definitions

Wire characteristic as illustrated in Figure A.

- Background: White
- 25-01 : Wire Code
- 2,5 : Wire Size 2,5 mm^2

If there is not any number in parenthesis, wire size is 1mm^2.

Wire characteristic as illustrated in Figure B
Wire size is indicated with the cross sectional area of conductor.

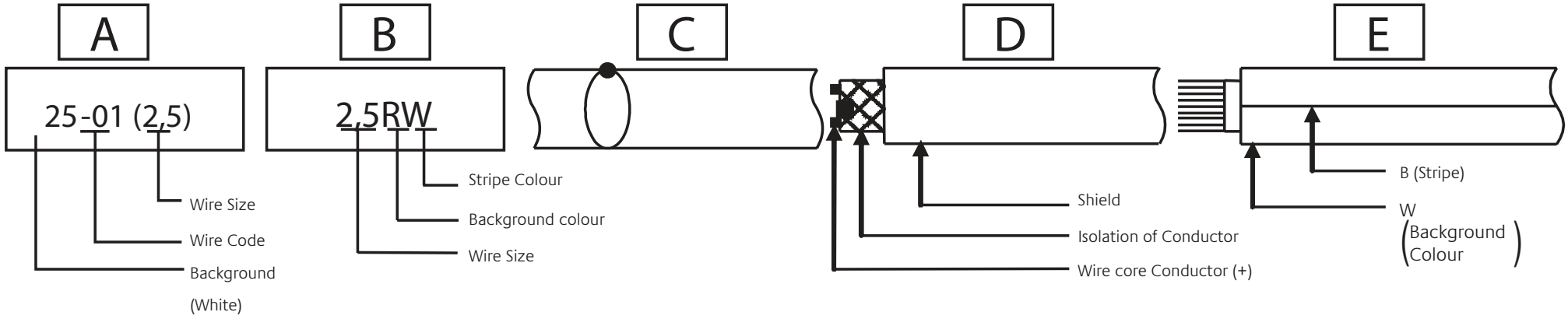
2.5RW
2,5: Cross sectional area of conductor is 2,5 mm^2.
RW: Background colour is RED, Stripe colour is WHITE

No wire size is shown for a shielding wire but is

Shield wires are indicated as shown bellow (Figure C) to distinguish them from other wires.
Wire colours are shown with the capital letter of each colour.
When the capital letters of the colours are the same, they will be identified as follows:

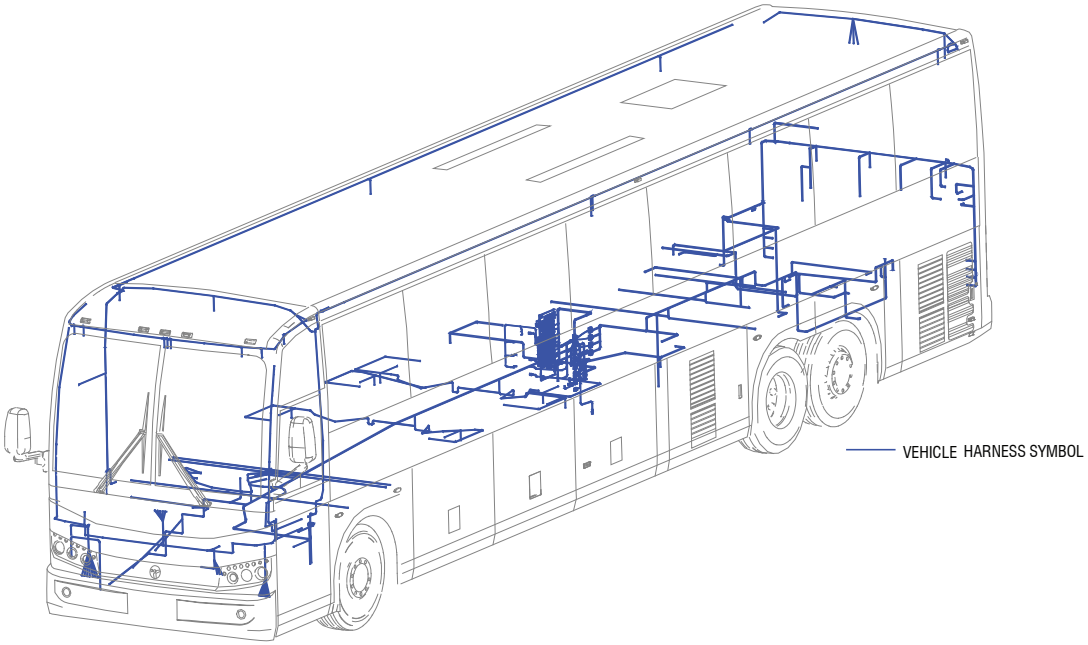
R Red
L Blue
Br Brown

Where a stripe is added to the wire colour, a combination of two capital letters is used.e.g. :
RY (Yellow stripe on red background)
WB (Black stripe on white background)



00.2.5 Wire Definitions

BACKGROUND & STRIPE COLOURS							
B	Black	LgR	Light Green/Red	VY	Violet/Yellow		
BG	Blcak/Green	LgY	Light Green/Yellow	W	White		
BL	Black/Blue	LgW	Light Green/White	WB	White/Black		
BR	Black/Red	LO	Blue/Orange	WG	White/Green		
Br	Brown	LR	Blue/Red	WL	White/Blue		
BrB	Brown/Black	LW	Blue/White	WR	White/Red		
BrW	Brown/White	LY	Blue/Yellow	Y	Yellow		
BrR	Brown/Red	O	Orange	YB	Yellow/Black		
BW	Black/White	OL	Orange/Blue	YG	Yellow/Green		
BY	Black/Yellow	P	Pink	YL	Yellow/Blue		
BrY	Brown/Yellow	PB	Pink/Black	YR	Yellow/Red		
G	Green	PG	Pink/Green	YW	Yellow/White		
GB	Green/Black	R	Red				
GL	Green/Blue	RB	Red/Black				
GR	Green/Red	RG	Red/Green				
GY	Green/Yellow	RL	Red/Blue				
GW	Green/White	RW	Red/White				
L	Blue	RY	Red/Yellow				
LB	Blue/Black	V	Violet				
LG	Blue/Green	VG	Violet/Green				
Lg	Light Green	VR	Violet/Red				
LgB	Light Green/Black	VW	Violet/White				



00.3. Wiring Harness Configurations

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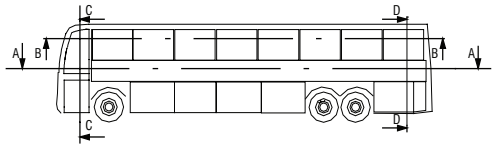
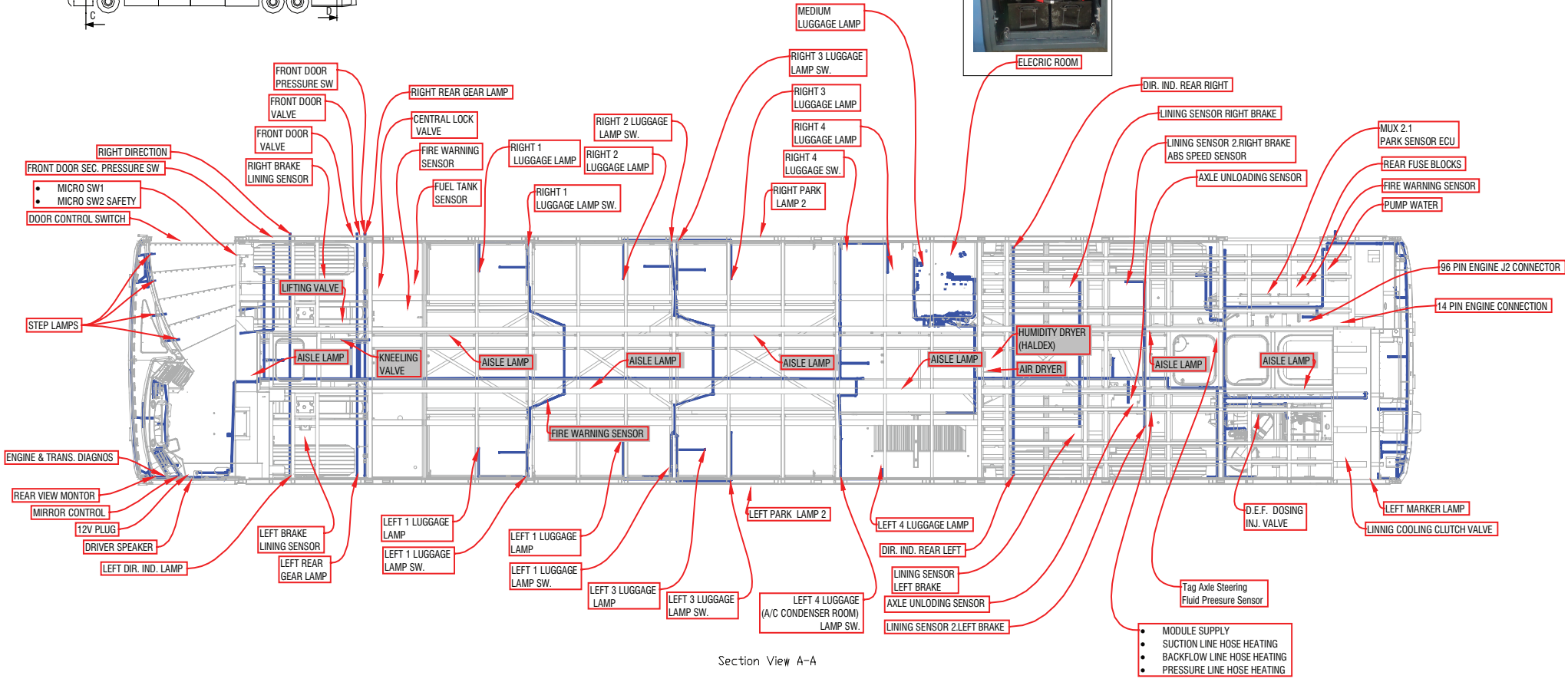
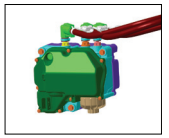
00.3.1 CHASSIS WIRING HARNESS



ELECRIC ROOM

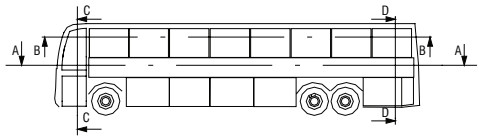


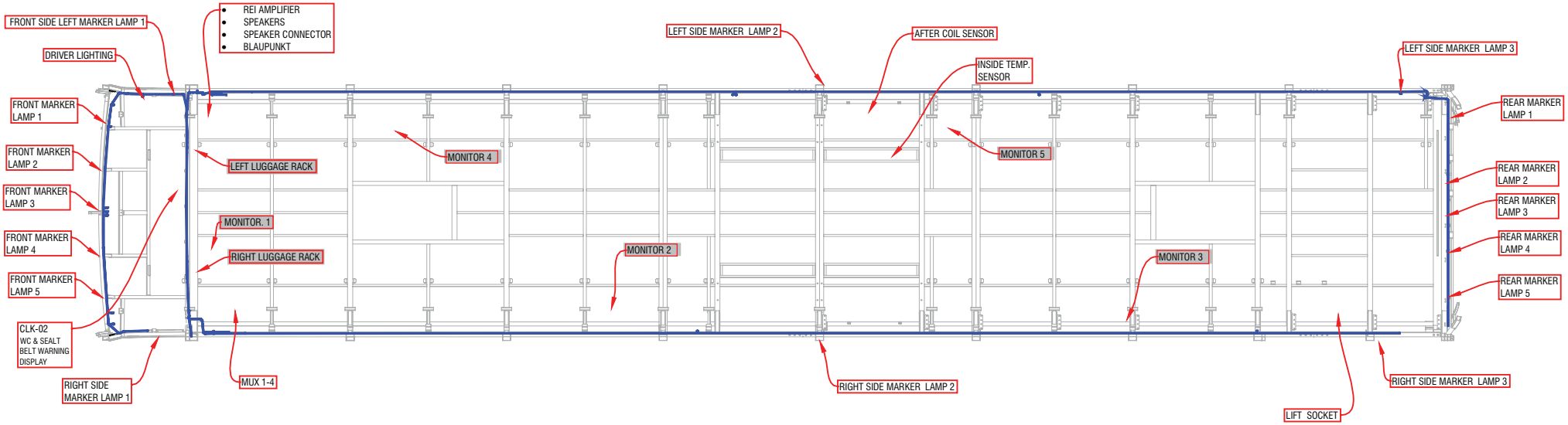
Section View A-A



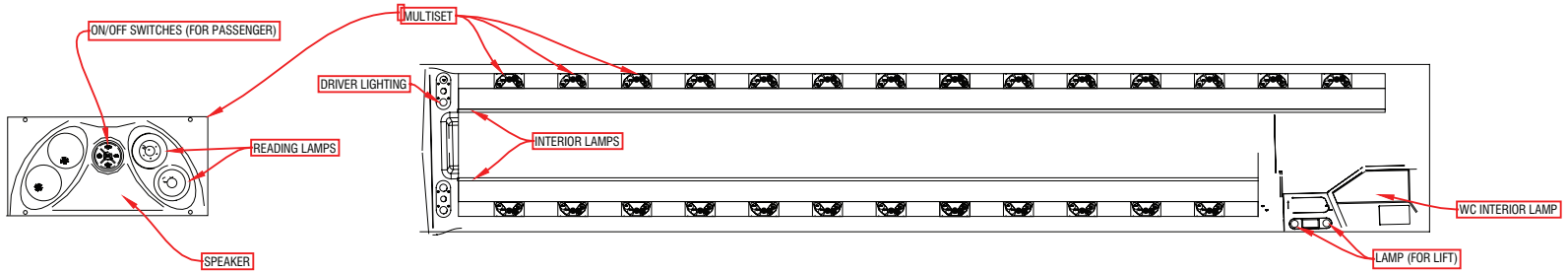
Note: Harness Symbol
xxx Component Label (These red arrows show the approximate locations of labels on harnesses.)

00.3.2 ROOF WIRING HARNESS



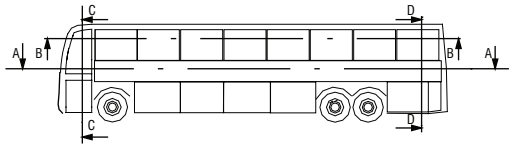


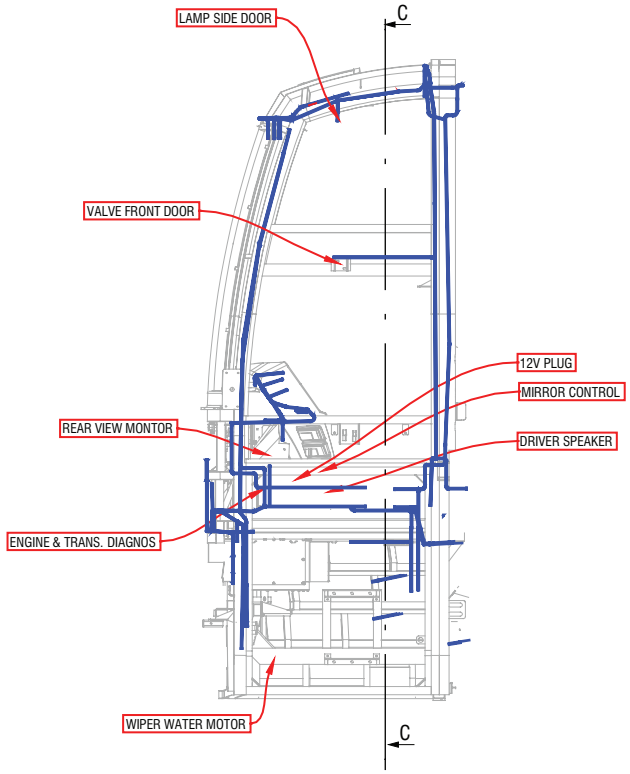
Section View B-B

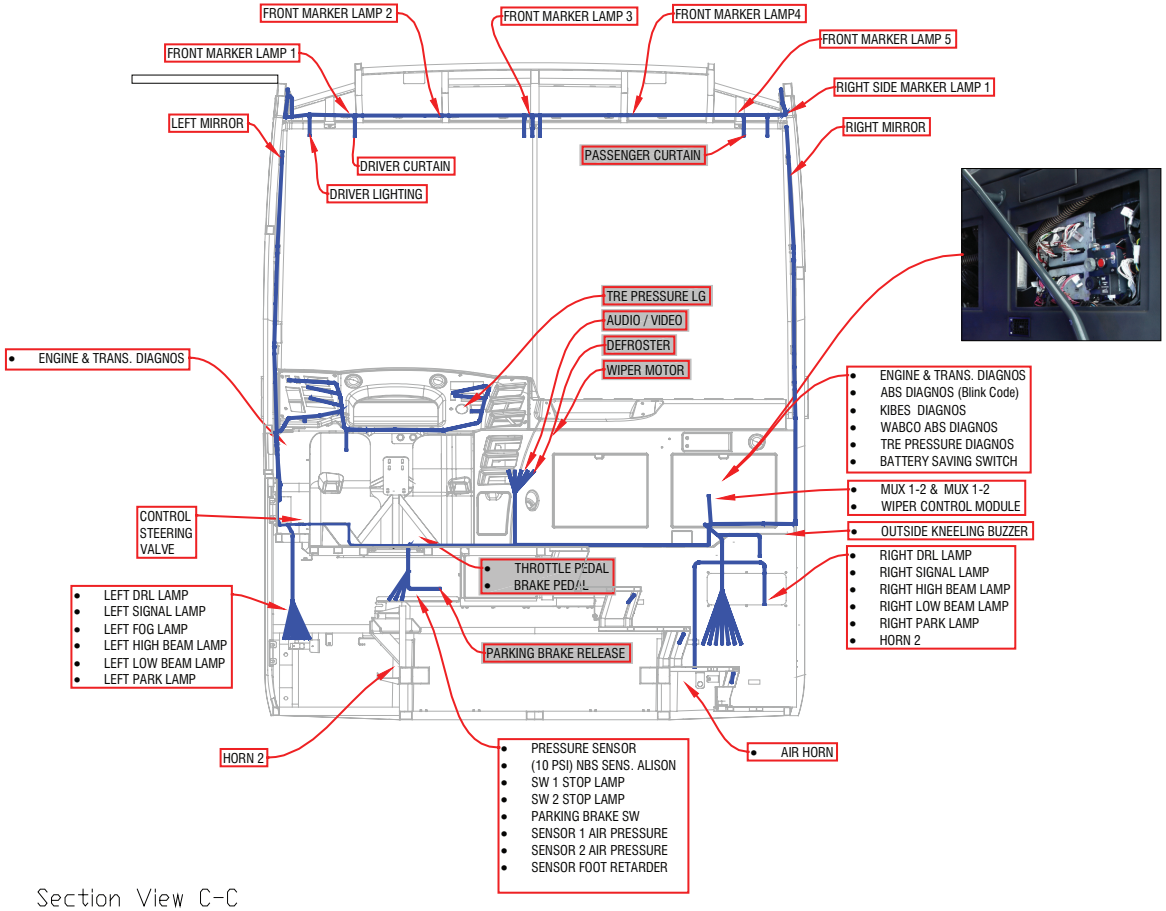


Note: Harness Symbol
xxx Component Label (These red arrows show the approximate locations of labels on harnesses.)

00.3.3 FRONT BODY WIRING HARNESS







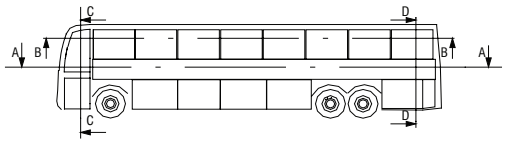
Section View C-C

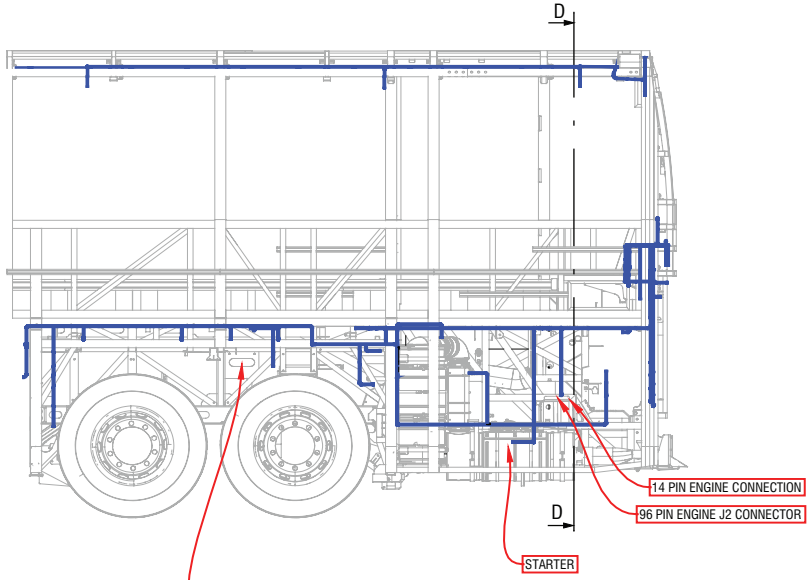
Note: Harness Symbol

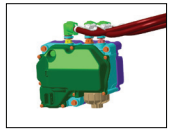
xxx Component Label (These red arrows show the approximate locations of labels on harnesses.)

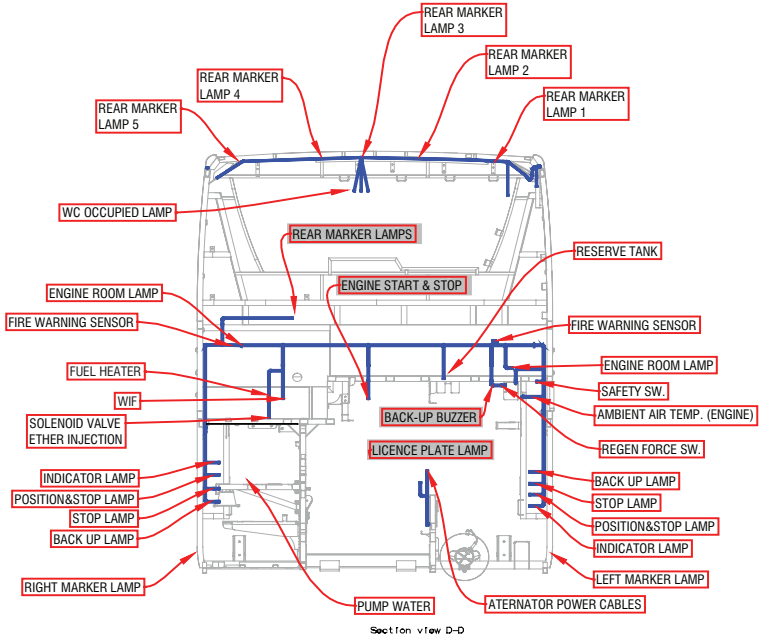
	TS45	Note:	TEMSA

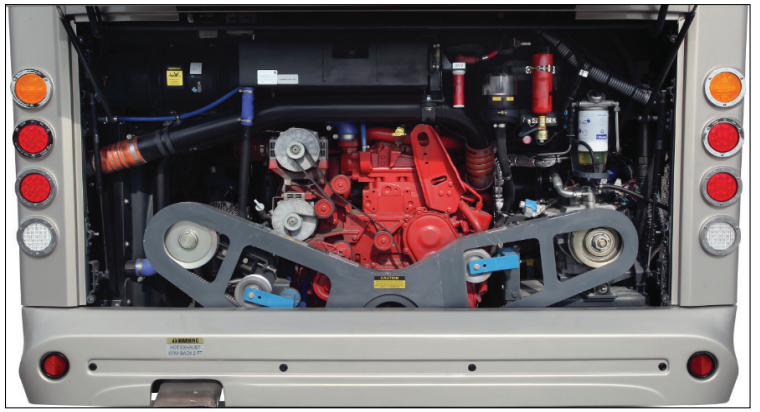
00.3.4 ENGINE ROOM WIRING HARNESS







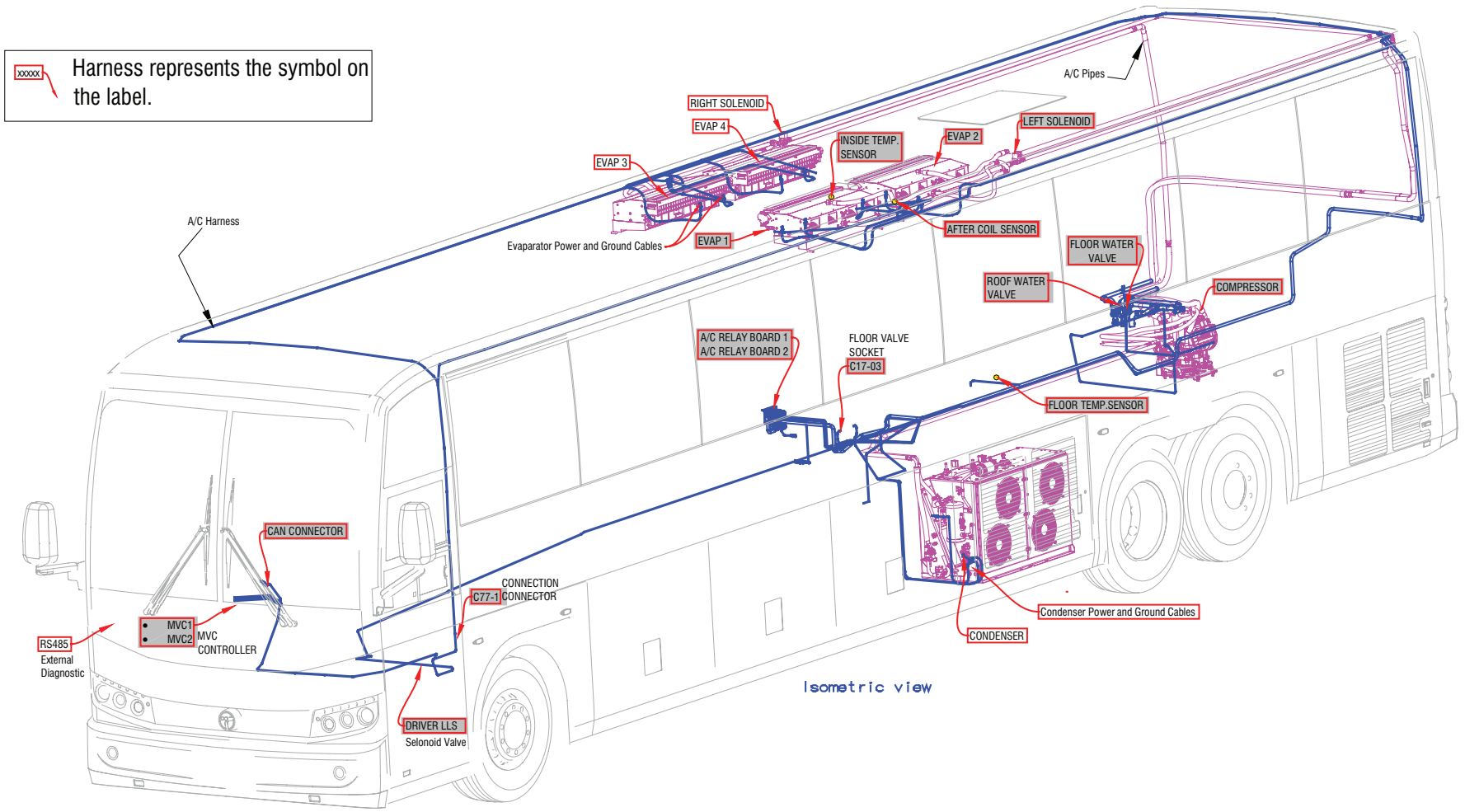




xxx Component Label (These red arrows show the approximate locations of labels on harnesses.)

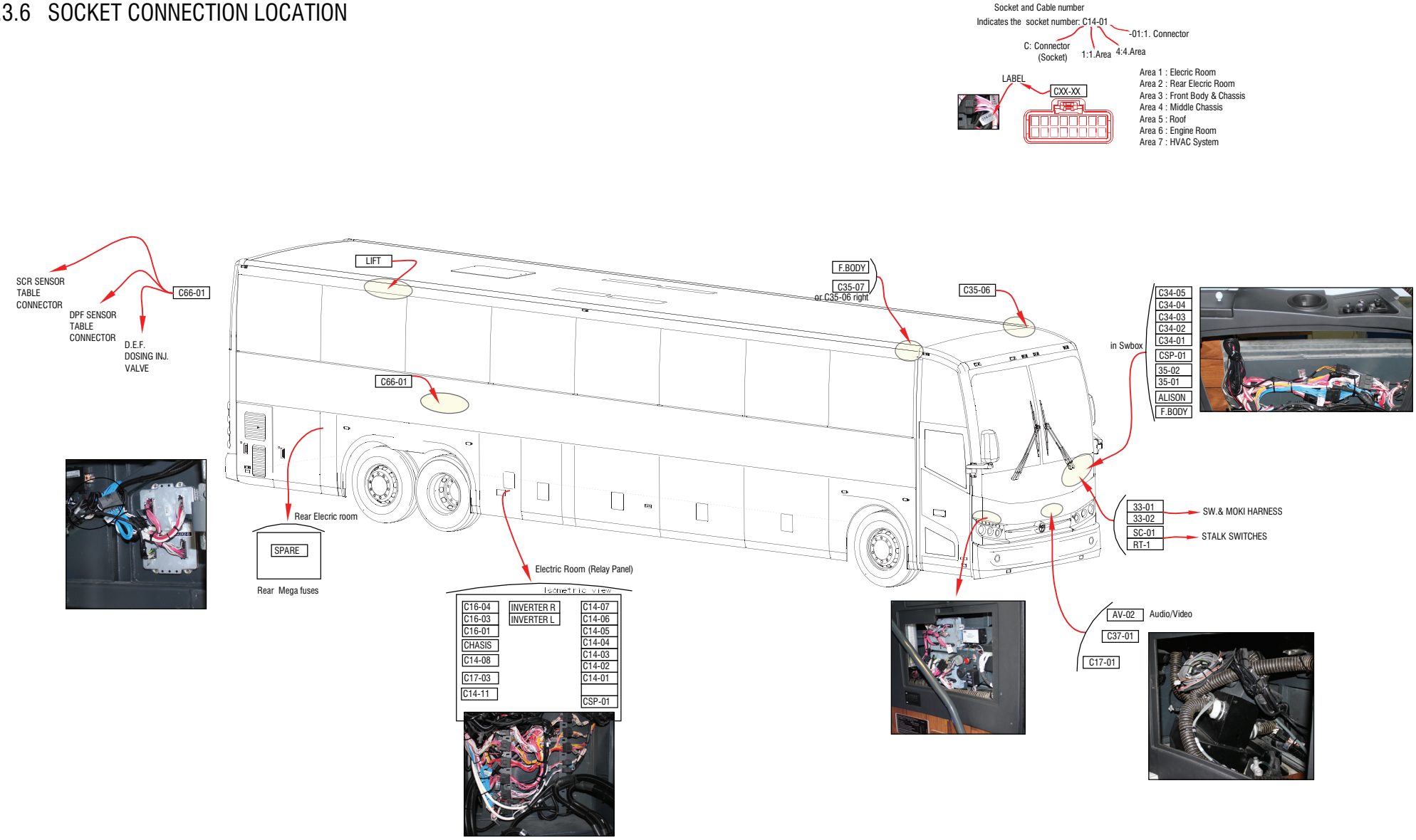
Note: Harness Symbol

00.3.5 A/C (HVAC) WIRING HARNESS

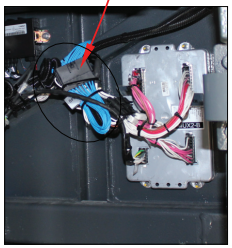


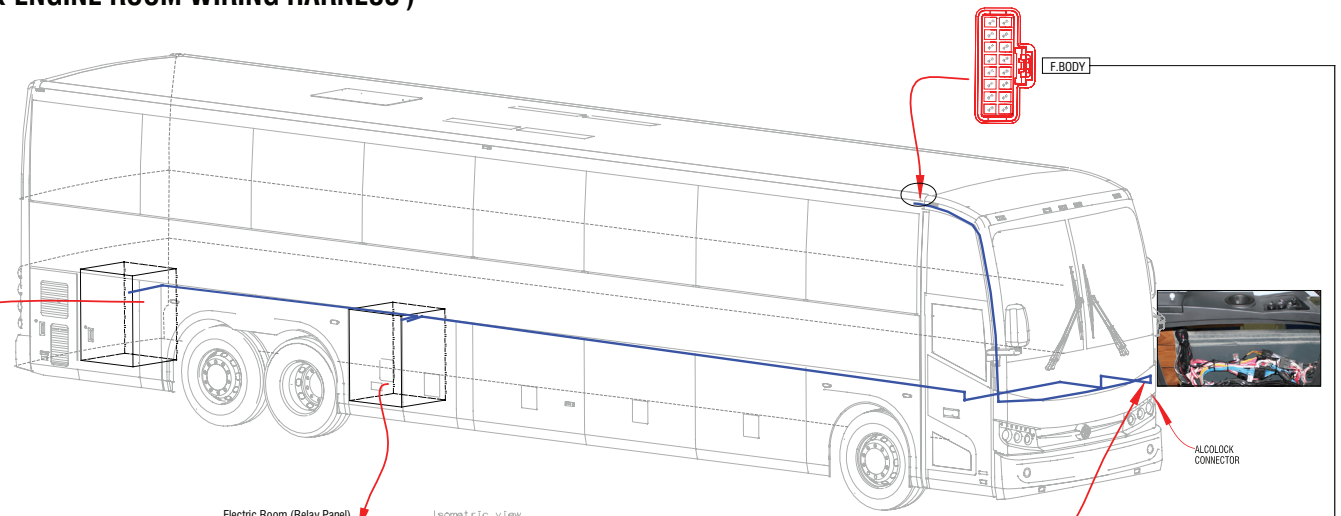
Note: Harness Symbol
xxx Component Label (These red arrows show the approximate locations of labels on harnesses.)

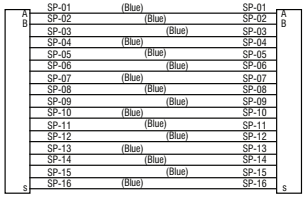
00.3.6 SOCKET CONNECTION LOCATION

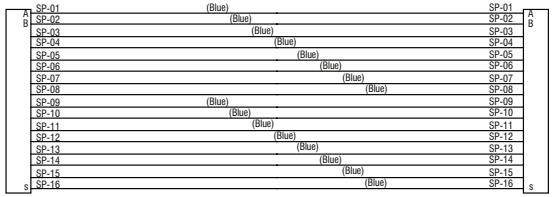


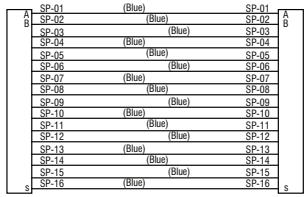
00.3.7 SPARE CABLE (CHASSIS & ENGINE ROOM WIRING HARNESS)

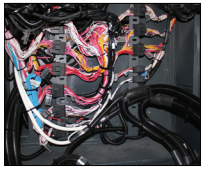


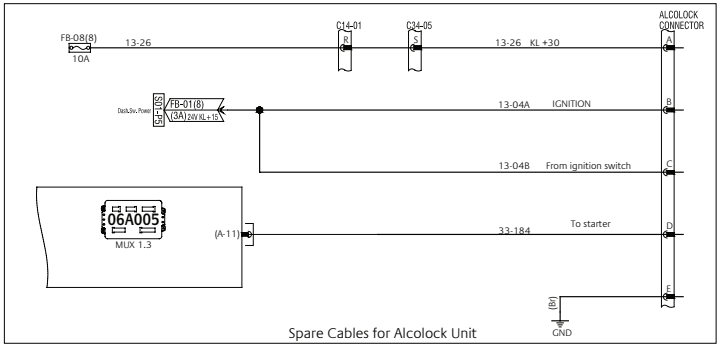






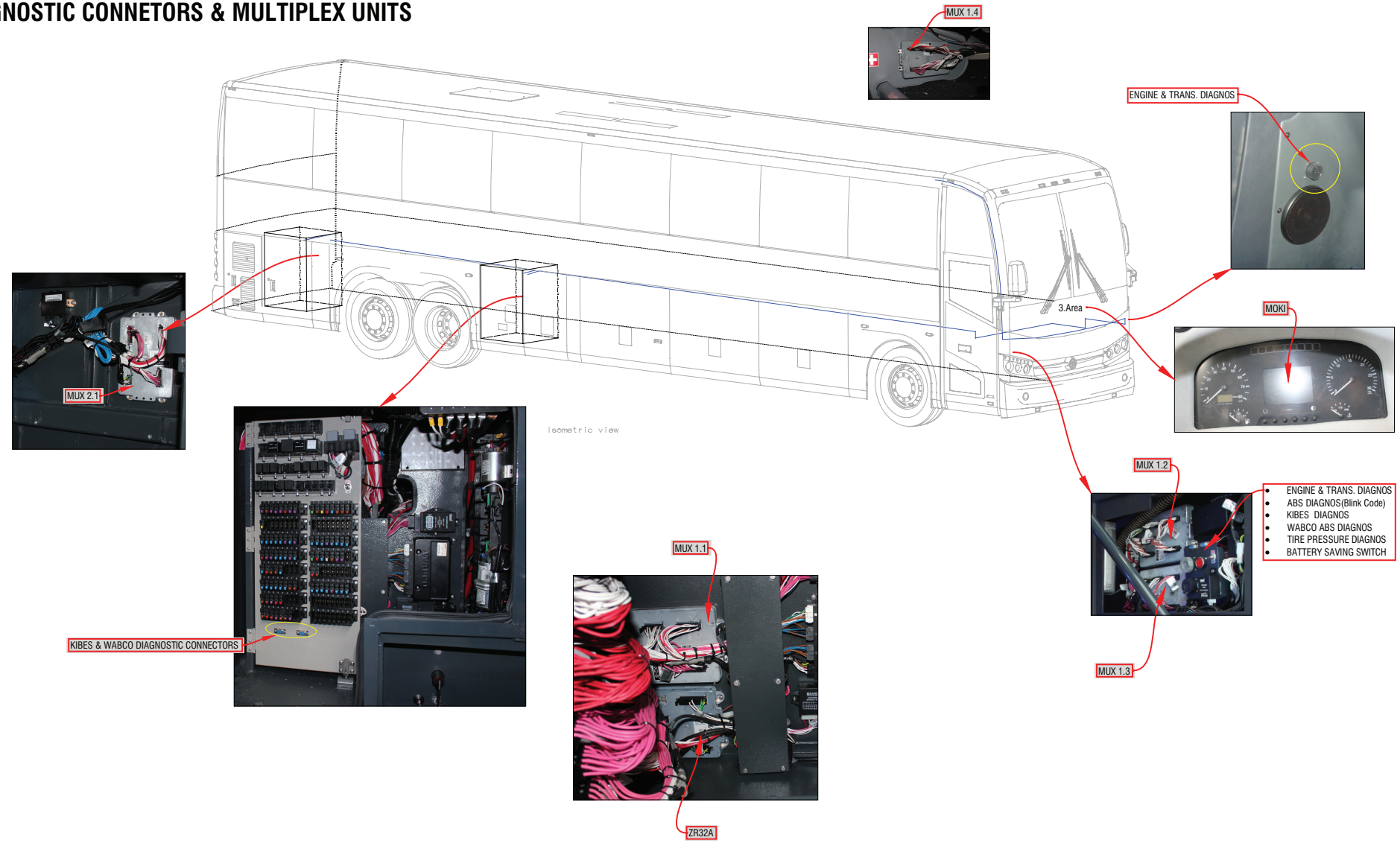






Note: Harness Symbol
xxx Component Label (These red arrows show the approximate locations of labels on harnesses.)

00.3.8 DIAGNOSTIC CONNETORS & MULTIPLEX UNITS



Note: Harness Symbol
xxx Component Label (These red arrows show the approximate locations of labels on harnesses.)